

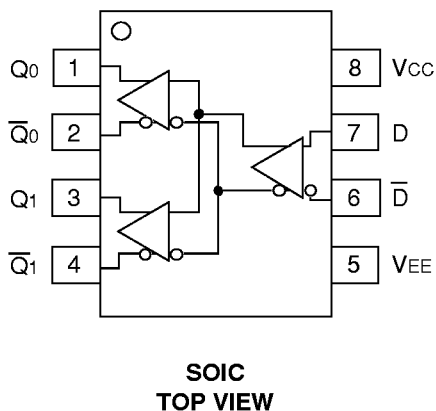
FEATURES

- 375ps propagation delay
- 1.6V output swings
- Internal 75KΩ input pull-down resistors
- ESD protection of 2000V
- Available in 8-pin SOIC package

DESCRIPTION

The SY10EL89 is a differential fanout gate specifically designed to drive coaxial cables. The device is especially useful in Digital Video Broadcast applications. For this application, since the system is polarity-free, each output of the device can be used as an independent driver. The driver boasts a voltage gain of approximately 40 and produces output swings twice as large as a standard ECL output. When driving a coaxial cable, proper termination is required at both ends of the line to minimize signal loss. The 1.6V output swings allow for termination at both ends of the cable while maintaining the required 800mV swing at the receiving end of the cable. Because of the larger output swings, the device cannot be terminated into the standard -2.0V. All of the DC parameters are tested with a 50Ω to -3.0V load. The driver accepts a standard differential ECL input and can run off the Digital Video Broadcast standard -5.0V supply.

PIN CONFIGURATION/BLOCK DIAGRAM



PIN NAMES

| Pin | Function |
|--------|--------------|
| D | Data Inputs |
| Q0, Q1 | Data Outputs |

DC ELECTRICAL CHARACTERISTICS

$V_{EE} = V_{EE} (\text{Min.})$ to $V_{EE} (\text{Max.})$; $V_{CC} = \text{GND}$

| Symbol | Parameter | $T_A = -40^\circ\text{C}$ | | | $T_A = 0^\circ\text{C}$ | | | $T_A = +25^\circ\text{C}$ | | | $T_A = +85^\circ\text{C}$ | | | Unit |
|----------|------------------------------------|---------------------------|-------|-------|-------------------------|-------|-------|---------------------------|-------|-------|---------------------------|-------|-------|---------------|
| | | Min. | Typ. | Max. | Min. | Typ. | Max. | Min. | Typ. | Max. | Min. | Typ. | Max. | |
| I_{EE} | Power Supply Current | 18 | 23 | 28 | 18 | 23 | 28 | 18 | 23 | 28 | 18 | 23 | 28 | mA |
| V_{OH} | Output HIGH Voltage ⁽¹⁾ | -1.23 | -1.10 | -0.98 | -1.17 | -1.05 | -0.93 | -1.13 | -1.02 | -0.90 | -1.06 | -0.96 | -0.81 | V |
| V_{OL} | Output LOW Voltage ⁽¹⁾ | -2.84 | -2.72 | -2.58 | -2.84 | -2.70 | -2.56 | -2.84 | -2.70 | -2.56 | -2.84 | -2.67 | -2.51 | V |
| V_{EE} | Power Supply Voltage | -4.75 | — | -5.5 | -4.75 | — | -5.5 | -4.75 | — | -5.5 | -4.75 | — | -5.5 | V |
| I_{IH} | Input HIGH Current | — | — | 150 | — | — | 150 | — | — | 150 | — | — | 150 | μA |

NOTE:

- V_{OH} and V_{OL} specified for 50Ω to -3.0V load.

AC ELECTRICAL CHARACTERISTICS

$V_{EE} = V_{EE} (\text{Min.})$ to $V_{EE} (\text{Max.})$; $V_{CC} = \text{GND}$

| Symbol | Parameter | $T_A = -40^\circ\text{C}$ | | | $T_A = 0^\circ\text{C}$ | | | $T_A = +25^\circ\text{C}$ | | | $T_A = +85^\circ\text{C}$ | | | Unit |
|------------------------|--|---------------------------|------|------|-------------------------|------|------|---------------------------|------|------|---------------------------|------|------|------|
| | | Min. | Typ. | Max. | Min. | Typ. | Max. | Min. | Typ. | Max. | Min. | Typ. | Max. | |
| t_{PLH} t_{PHL} | Propagation Delay to Output D | 200 | 340 | 480 | 250 | 340 | 430 | 260 | 350 | 440 | 310 | 400 | 490 | ps |
| t_{skew} | Within-Device Skew | — | 5 | 20 | — | 5 | 20 | — | 5 | 20 | — | 5 | 20 | ps |
| V_{PP} | Minimum Input Swing ⁽¹⁾ | 150 | — | — | 150 | — | — | 150 | — | — | 150 | — | — | mV |
| V_{CMR} | Common Mode Range ⁽²⁾ | (2) | — | -0.4 | (2) | — | -0.4 | (2) | — | -0.4 | (2) | — | -0.4 | V |
| t_r t_f | Output Rise/Fall Times Q (20% to 80%) | 205 | 330 | 455 | 205 | 330 | 455 | 205 | 330 | 455 | 205 | 330 | 455 | ps |

NOTES:

- Minimum input swing for which AC parameters are guaranteed. The device has a DC gain of ≈ 40 .
- The CMR range is referenced to the most positive side of the differential input signal. Normal operation is obtained if the HIGH level falls within the specified range and the peak-to-peak voltage lies between $V_{PP \text{ min.}}$ and 1V . The lower end of the CMR range is dependent on V_{EE} and is equal to $V_{EE} + 3.0\text{V}$.

DC BLOCKING CAPACITORS

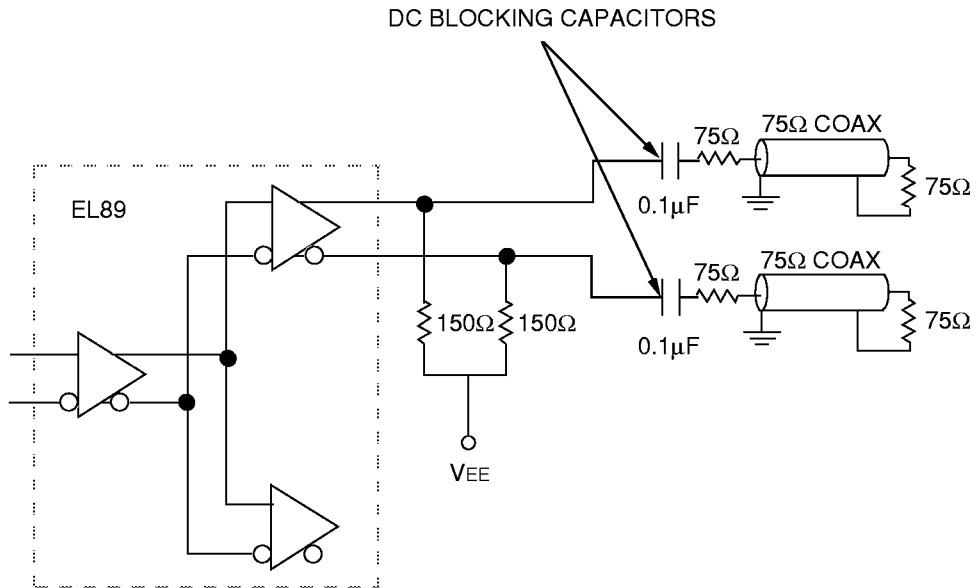


Figure 1. Termination Configuration

PRODUCT ORDERING CODE

| Ordering Code | Package Type | Operating Range |
|---------------|--------------|-----------------|
| SY10EL89ZC | Z8-1 | Commercial |
| SY10EL89ZCTR | Z8-1 | Commercial |

8 LEAD PLASTIC SOIC (Z8-1)

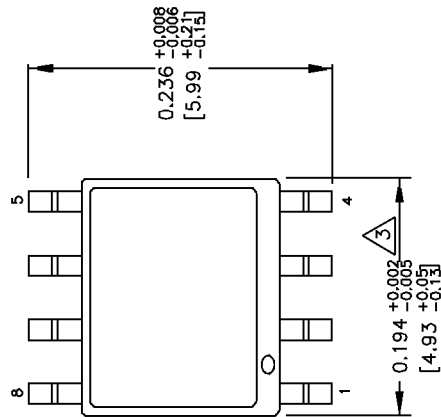
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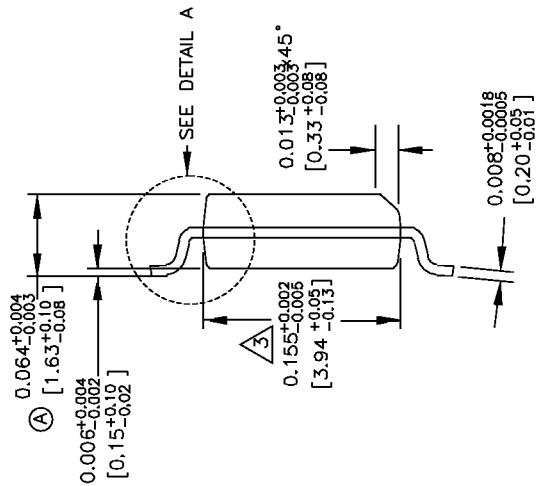
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| REV. | REVISION DESCRIPTION | DATE |
|------|---|----------|
| 00 | NEW OUTLINE DRAWING. | 01/20/94 |
| 01 | CONVERT TO AUTOCAD. REFERENCE AMKOR DWG. NO. 00019 REVOS. MAKE (A) SAME AS JEDEC. | 12/14/96 |
| 02 | ADDED LEAD WIDTH AND PITCH DIMENSIONS. CORRECTED TYPOS. | 03/12/97 |
| 03 | CONVERT DWG TO REL.13 AND ONE PAGE DOCUMENT. | 02/20/98 |

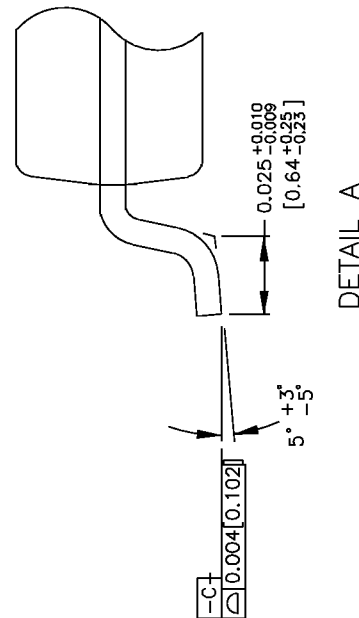
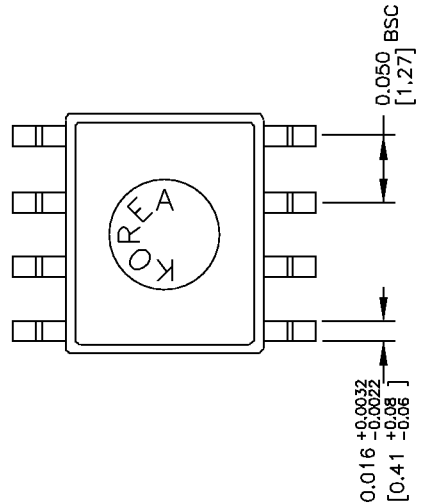
TOP VIEW



END VIEW



BOTTOM VIEW



NOTES:

1. DIMENSIONS ARE IN INCHES[MM].
2. CONTROLLING DIMENSION: INCHES.
3. DIMENSION DOES NOT INCLUDE MOLD FLASH OR PROTRUSIONS, EITHER OF WHICH SHALL NOT EXCEED 0.006[0.152] PER SIDE.



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| APPROVALS | DATE | APPROVALS | DATE | SIZE | PACKAGE OUTLINE | SCALE |
|---------------------------------|----------|---------------------------------------|------|------|----------------------------------|----------|
| ORIGINATOR: ERMIN G. URRUTIA | 02/23/98 | QUALITY: MARSHALL WILDER | | A | 8 LEAD PLASTIC SOIC (.150" WIDE) | N/A |
| CHK'D: WON CHANG | | DOCUMENT CONTROL: BRIAN SANFILIPPO | | | | REVISION |
| RELEASE DATE: | | | | | | 03 |

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